

# Design Top Energy Performing Buildings

EPA's **ENERGY STAR**® now provides tools and resources for architects and engineers to deliver superior energy performance in projects for their clients.

Through ENERGY STAR, design firms can:

- Help clients save energy and money by designing buildings that have reduced operating costs and increased property asset values.
- Create comfortable, sustainable buildings that optimize energy and reduce environmental impacts.
- Gain a market advantage by partnering with ENERGY STAR and being recognized for designing buildings with superior energy performance.

ENERGY STAR is a voluntary partnership between businesses, organizations, and government with a common goal—preventing greenhouse gas emissions through improved energy performance.

## Move from Energy Efficiency to Superior Performance

Specifying energy-efficient equipment is important in building design, but is not the only condition necessary for achieving superior energy performance. Right-sizing the equipment and systems integration are equally critical factors. Until recently, designers had no easy way to know if equipment choices and strategies would yield the estimated annual energy necessary to achieve superior energy performance.

An EPA study found that there can be up to a 400-percent difference in energy use between the best and worst performing buildings. It also reported that many newly constructed buildings with energy-efficient equipment or technologies were just as often in the worst performing quartile as in the top.<sup>1</sup> Simply specifying energy efficiency does not always guarantee a *better* performing building. Architects need to be able to set an energy target comparable to top performing buildings and design for optimum energy use.

EPA has tools that help design teams establish a reliable energy use target and rate energy performance. The 100-point energy performance rating provides a standard method for ranking estimated or actual energy performance for a particular building type in a specific location. ENERGY STAR, the rating of 75 or better, is the benchmark for energy use intensity. For building design, EPA recommends a target that exceeds 75. If energy simulation shows that design energy use will not meet the target, your team can evaluate and modify strategies to achieve the desired goal.

EPA's energy performance rating is an easy-to-use Web-based tool for:

- **Commercial new construction** — *Target Finder* estimates how well a design will perform compared to similar buildings already built and operating. Target Finder also provides a quick benchmark for energy use.
- **Operating buildings** — *Portfolio Manager* tracks energy use over time, using data from building utility bills. To determine whether a building qualifies for ENERGY STAR, enter 12 months of current utility data and Portfolio Manager provides a rating. A building that scores 75 or better and meets indoor environmental requirements can earn the ENERGY STAR.

*"A critical aspect of integrated energy design is establishing goals. The design team and client will revert to business as usual if they don't set specific performance targets that identify energy use and other key criteria."*

**William G. Reed, AIA**  
"The Integrated Design Process—  
A practice method for  
green building." (1999)

<sup>1</sup> Source: "Is What They Want What They Get." New Buildings Institute, 2002.

Building designs that exceed ENERGY STAR use our natural resources in a sustainable, energy-saving manner.

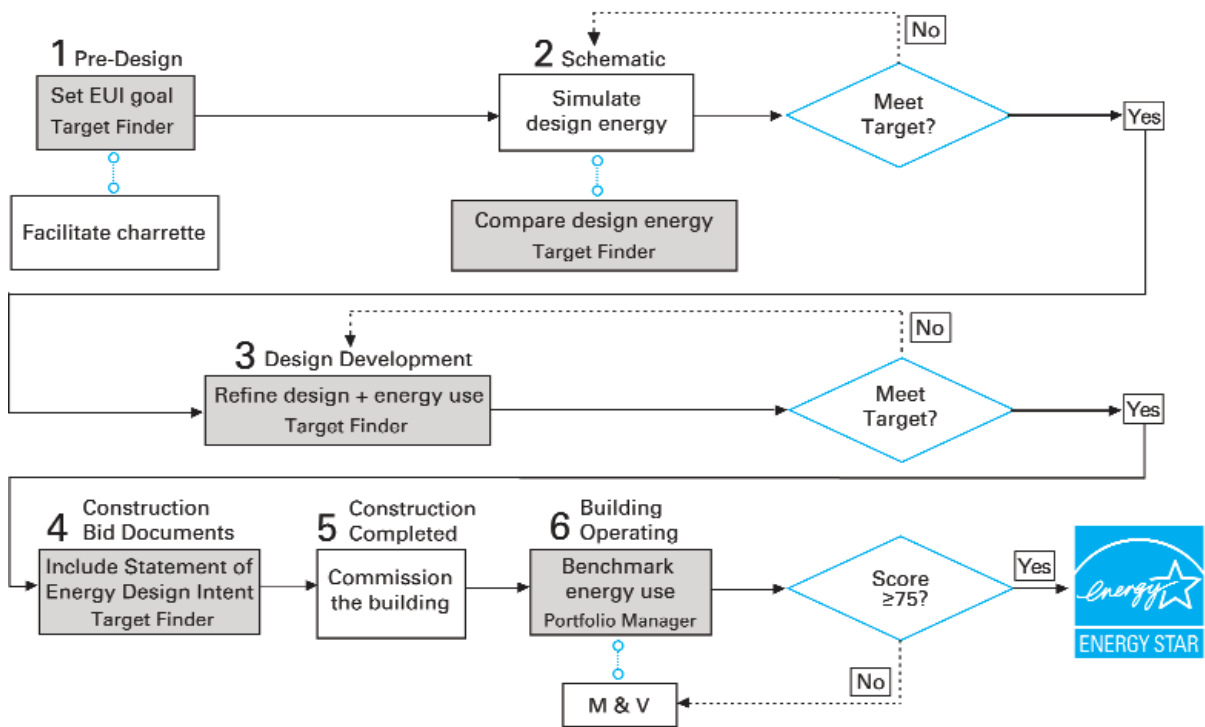


## Tap into Design Resources from ENERGY STAR

EPA's *New Building Design Guidance* will help you express quantifiable energy goals. It recommends a set of actions with related resources for each step in the design process—a process that considers energy from start to finish. You can access the *Guidance* on the ENERGY STAR Web site.

**Figure 1. Design Process Diagram**

Shows when to use EPA's energy performance rating (in shaded boxes) during the integrated design process.



**Figure 2. Energy Outcome Table**

Outlines the energy objective for each stage in the design process.

Stage		Desired Outcome
Design	1	Establish energy performance goals—kBtu/ft <sup>2</sup> /yr and energy performance rating score
	2	Determine whether design energy meets target
	3	Meet design energy use target
Documentation & Accountability	4	State energy performance goals in contract documents
	5	Commission the building and systems
	6	Achieve energy performance goals and earn the ENERGY STAR for your building

View the *Guidance* at [www.energystar.gov](http://www.energystar.gov)—Select "Business Improvement," choose "Energy Management Strategy," then select "Create and Implement Action Plan." Scroll down to "New Building Design Guidance."